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Minnesota Cottage Food Industry: Insights from Extension Food Safety Education

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Cover Page Footnote

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Abstract. The cottage food industry has become a significant part of the food supply in Minnesota, most likely as a result of the growing consumer demand for locally produced, minimally processed and value-added foods. Using post-training evaluations, we characterized the cottage food producers in Minnesota and assessed the impact of our food safety course. The results showed that the producers are mostly white women (71%), producing and selling a variety of products. The learners gained knowledge to safely produce and handle homemade food products for direct sale to consumers. Majority (80%) of the learners were satisfied with the course.

INTRODUCTION

According to a policy statement by the National Environmental Health Association (2018), “To combat [the] risk from home kitchens and protect public health, cottage food [producers] ... should be required to annually complete food safety or food handler training that is administered by an accredited organization” (p. 4). This point of view is based on research showing the prevalence of foodborne pathogens in home kitchens (Borrusso & Quinlan, 2017; Byrd-Bredbenner et al., 2013) and is supported by the Association for Food and Drug Officials (2012). Given that home kitchens are dynamic, multi-functional, and uninspected spaces, it is necessary to educate and train cottage food producers on proper food handling practices to mitigate the risk of cross-contamination (Association for Food and Drug Officials, 2012; Borrusso & Quinlan, 2017).

In Minnesota, the cottage food industry is regulated under the Cottage Food Law (CFL) that went into effect in 2015 (Cottage Foods Exemption, 2021). The law provides two options (Tier 1 and 2) for individuals interested in producing food in their home kitchens for direct sale to consumers. Tier 1 requires basic online food safety training provided by the Minnesota Department of Agriculture (MDA). Cottage food producers (CFPs) registered under this category are limited to a maximum annual sale of \$7,665. To obtain Tier 2 registration, which allows a maximum annual sale of \$78,000, CFPs are required to take a mandated, comprehensive food

safety course offered through the University of Minnesota (UMN) Extension. The registration in both cases is obtained directly from MDA. Registered CFPs are required to retake the food safety training every three years and re-register annually (MDA, 2021).

In our research we focused on the UMN Extension Tier 2 Cottage Food: Keep it Safe! Keep it Legal! Program. This course includes in-person and online course offerings and is supplemented with a Q&A blog, quarterly electronic newsletters, and online publications to educate this growing industry (UMN Extension, 2022). In the course we:

1. Teach learners how to safely produce, package, label, store, and transport approved food products.
2. Address the risk of foodborne illness and consider appropriate mitigation strategies.
3. Discuss food allergens and cross-contact prevention measures to protect public health.
4. Provide time for hands-on experiences during which learners can test their products for pH and water activity and learn proper food processing techniques. In the online version of the course, video demonstrations of these concepts are included for clarity and completion.

Between 2015 and 2019, 41 in-person sessions were offered to a total of 647 producers. The online version of the course was launched in late 2017 and had served 364 learners

by the end of 2019. The goal of the project was to characterize present and prospective CFPs in Minnesota and assess their experiences with our Tier 2 course.

METHODS

We designed and administered post-training evaluations online in Qualtrics to learners who took the Tier 2 course in 2018 and 2019 (339 individuals). The questions focused on course content, delivery, and level of satisfaction. Learners also provided feedback on self-assessed knowledge gain on fundamental concepts and reported the types of products produced and sold. Qualitative data were analyzed following thematic content analysis. An initial heuristic read through the comments led to generation of key themes. All comments were summarized using these themes that captured the content being communicated (open coding). Themes addressing similar content were then grouped together to further minimize repetition and redundancy. Themes that could not be grouped were classified individually. Tallies under each theme represented the number of times similar comments were observed (Burnard et al., 2008).

RESULTS

According to data provided by MDA, there were 3,969 actively registered CFPs living across the state of Minnesota at the end of 2019 (Heather Stewart, personal communication, May 12, 2020). The cumulative annual registration breakdown since the CFL went into effect in 2015 is shown in Table 1.

On the basis of these data, we estimated that the cottage food industry has the potential to contribute \$22 million annually to the economy in Minnesota if all the registered producers achieved their maximum allowable sales. To calculate this, the number of registered producers in each tier was multiplied by the maximum annual allowable sales, and

then resulting numbers were added together. If the producers purchase their ingredients and other raw materials locally, the economic contribution to the state would be higher.

In 2018 and 2019, a total of 339 learners took the Tier 2 course. Of these, 230 (68%) responded to the post-training evaluations (136 females [71%]; 49 males [25%]) and 8 learners who preferred not to self-identify (4%). The learners self-identified as White (84%), Asian (6%), Black/African American (5%), American Indian/Alaska Native (1%), Native Hawaiian/Other Pacific Islander (1%), or Other (2%). Less than half of the learners (41%) were registered CFPs at the time of the course. Of those registered, 30% had been producing and selling products for less than one year. Only 18% had been registered producers for more than three years.

Learners that were registered CFPs produced and sold a wide variety of food products. The top five products mentioned were baked goods (43%); icing, frostings, and sugar art (15%); jams and jellies (9%); fermented products (8%); and candy and confections (7%). Learners that were not yet registered CFPs at the time of the course mentioned that they were considering selling many of these same products, with baked goods (33%); candy and confections (17%); and jams and jellies (13%) as the top three preferences.

The learners used varied amounts of time to complete the course: whereas some spent less than 2 hours (4%), others needed more than 5 hours (18%). However, most of the learners took between 3 and 5 hours (74%). The process went smoothly for 79% of the learners, while the rest experienced some type of technical difficulty primarily regarding page navigation and completion notifications. The majority (80%) of the learners felt that the course met their expectations.

We also assessed self-reported knowledge gain among learners in five key areas: 1) the CFL; 2) food processing methods; 3) safe food handling; 4) product labelling and packaging; and 5) product points of sale (Figure 1). Many producers (65%) learned “a lot or a great deal” about the CFL. In regard to safe food handling practices, roughly the same number of learners reported learning “a lot or a great deal” (36%), “some” (30%), or “a little or not at all” (34%). In the remaining areas, about 50% of the learners gained “a lot or a great deal” of knowledge.

Additionally, the learners shared individual implementation goals as a result of this self-reported knowledge gain. We aligned these qualitative goal entries with the aforementioned five key areas, and the summary is presented in Table 2. Most of the goals were categorized as safe food handling practices (118 mentions). Some learner expectations were not met (Table 3). For instance, 25 learners asked general questions regarding product testing and another 13 hoped to learn about business topics such as marketing, pricing, and taxes. Two learners wanted to learn how to cook.

Table 1. Annual Cottage Food Producer Registration in Minnesota

Year	Tier 1 (\$5,000)	Tier 2 (\$5,001–\$18,000)
2015	433	31
2016	1,717	98
2017	2,453	103
2018	3,305	124
2019	3,773	196

Note. In 2021, the sales cap changed to \$7,665 and \$78,000 for Tier 1 and 2, respectively. (See the conclusion section on p. 11 for other legislative changes to the Minnesota CFL.)

Cottage Food Producers in Minnesota

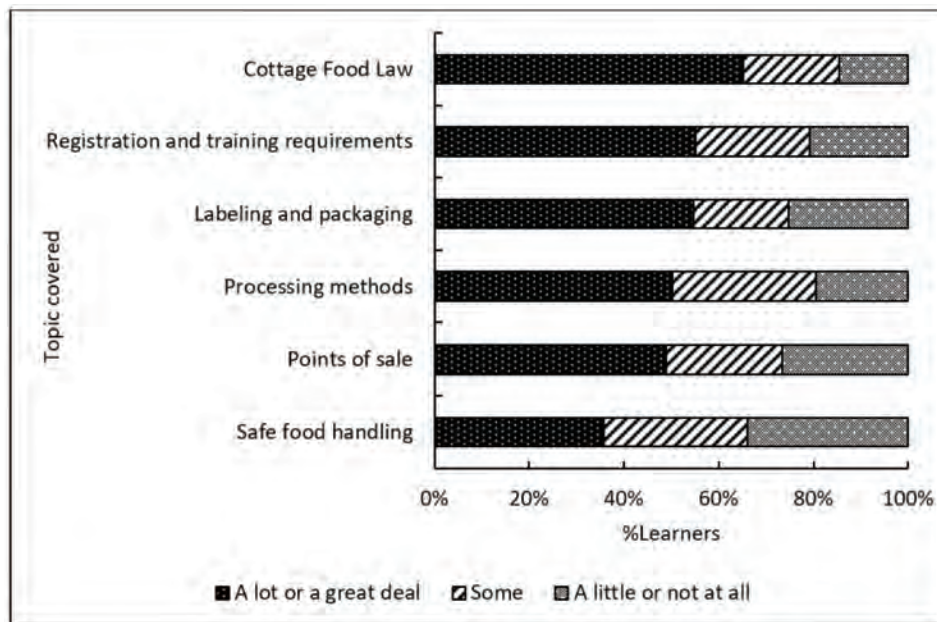


Figure 1. Producer self-reported increase in knowledge in five key topic areas.

Table 2. Practice Implementation Goals Listed by Learners

Implementation Goal	Number of Mentions
Safe food handling practices	118
Proper product labelling and packaging	55
Processing methods	35
Cottage Food Law	4
Point of sale	2
Registration and training requirements	1

Table 3. Something Producers Hoped to Learn From the Course but Did Not

Comments	Number of Mentions
General product questions, including testing	25
Business basics (budgeting, marketing, pricing, sales, taxes)	13
Cottage Foods registration and commercial licensing	6
More on growing beyond cottage foods	2
How to cook	2

DISCUSSION

The consistent increase in the number of people seeking cottage food registration each year reflects a general increased demand for local foods in the state and across the country (Crist & Canales, 2021; McDonald, 2019; Walljasper, 2012). The demographic data were in harmony with the observations that the cottage food industry is primarily attractive

to women (McDonald, 2017, 2019), and that Minnesota's population is primarily (> 80%) white (United States Census Bureau, 2019).

Our results indicated that only 18% of the responding cottage food producers had been in the industry for more than 3 years. This is reasonable because the CFL is relatively new. While there may be variations in producer preference, the food items produced and sold by the registered CFPs tak-

ing our Tier 2 course were typical of the cottage food industry nationwide (Forrager Inc., 2020; Hensley et al., 2018).

Learners self-reported to have acquired knowledge about the CFL to varying extents and shared activities that they would implement. These were all consistent with the material covered in the course. The unmet learner expectations about business acumen were out of scope for the Tier 2 course; however, this created an opportunity for value addition on our part. Relevant resources are now included in the broader course portfolio. We also maintain a blog in which we address commonly asked questions (UMN Extension, 2020). With regard to information that learners missed during the course such as product testing, a review of the material and ongoing conversations may be helpful in clarifying what was unclear.

BROADER CONSIDERATIONS

Until a federal system is put in place to regulate cottage food production, each state must continue to manage the producers independently. A recent study evaluated the impact of the cottage food industry on other food-related businesses and determined that Cottage Food Laws lower the barrier to entry and promote the creation of such non-employer businesses. However, the lack of data makes it difficult to assess the impact of related technical assistance programs, such as our Tier 2 course (Gwin et al., 2018; O'Hara et al., 2021). This present work is an effort toward addressing this data gap.

Given the ongoing trend of consumer demand for locally produced, value added food products, the cottage food industry is set to grow and serve a wider range of people as a result (Hensley et al., 2018; International Food Information Council, 2019; Low et al., 2015). CFPs mainly sold their products to neighbors and friends in the past, but now their products are featured in farmers' markets, restaurants, and retail stores, depending on the state. In the City of Minneapolis alone, there are 29 farmers' markets (City of Minneapolis, 2019). This poses an added risk of foodborne illness due to pathogens such as *Clostridium botulinum*, which is often attributed to canned foods, and norovirus, which is associated with food handlers (Clayton et al., 2002; Scallan et al., 2011).

Two known cases of outbreaks associated with cottage foods have been previously reported. The first was a *Clostridium botulinum* related outbreak in Ohio in 2014 and was attributed to home-canned pesto (Burke et al., 2016). The other occurred in Minnesota in 2018 and was linked to norovirus attributed to decorated cookies (Melius et al., 2018). Such occurrences indicate a risk that needs to be addressed through proper food safety training (Borrusso & Quinlan, 2017; Crist & Canales, 2021; Pires et al., 2021). Given the change in American food regulations from reaction to prevention, the Tier 2 course is well placed to continue contributing toward that overall goal. Consequently, we proactively adapt existing programs accordingly to address the increas-

ing need for food safety training as the cottage food industry grows. As we forecast the needs in the industry, three questions requiring further research arose:

1. What measures would need to be put in place to diversify the reach and benefits afforded under the CFL for the international and underrepresented communities in the state?
2. How would we go about verifying the implementation of food safety practices among CFPs without giving the impression of being the "permit police," which might interfere with our education mission?
3. How will the progress of food freedom laws across the country influence the cottage food industry in Minnesota?

CONCLUSION

Cottage food producers in Minnesota formed an association in 2019 to promote a sense of community and support for one another (Minnesota Cottage Food Producer's Association, 2020). In this sense, newer producers can benefit from those that are more familiar and comfortable with the CFL and related business challenges. Since the completion of the current project, the number of CFPs in the state has increased to 5,014 in Tier 1 and 300 in Tier 2, totaling 5,314 (Carrie Rigdon, personal communication, July 15, 2021). As a result of ongoing efforts by the association, the Minnesota Legislature passed changes to the Cottage Food Law on May 17, 2021 (MDA, 2022). These changes included:

1. The provision to prepare and sell non-potentially hazardous treats for cats and dogs.
2. An increase in the Tier 1 sales cap from \$5,000 to \$7,665 and that of Tier 2 from \$18,000 to \$78,000.
3. The option for individual registrants to organize their cottage food business as a business entity recognized by state law.

Overall, the Tier 2 educational program portfolio provides public value to the state by connecting our university resources to educate and support this growing industry. We hope that sharing these results contributes toward addressing the knowledge gap in working with and effectively supporting CFPs as they seek to navigate the regulatory landscape and run successful food businesses.

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